

Application No. 10/635,864
Docket No. 1999U026.US-CON3
Reply to Office Action Dated September 15, 2005

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A bimodal polyethylene copolymer comprising ethylene derived units and units derived from at least one of a C₄ to C₁₂ olefin; wherein the polyethylene has a density of from 0.940 to 0.970 g/cm³; an I₂₁/I₂ of 80 or more; a residual Group 4 metal content of 2.0 ppm or less; a Mw/Mn of from 20 to 60; and wherein the polyethylene comprises a high molecular weight component and a low molecular weight component, the high molecular weight component present from 40 to 60 weight percent based on the total polyethylene, and wherein the bimodal polyethylene has a weight average molecular weight Mw of 180,000 a.m.u. or more.
2. (Original) The bimodal polyethylene of Claim 1, possessing an I₂ of 0.5 g/ 10 min or less.
3. (Previously presented) The bimodal polyethylene of Claim 1, wherein the weight average molecular weight Mw of the bimodal polyethylene is 200,000 or more.
4. (Original) The bimodal polyethylene of Claim 1, wherein the weight average molecular weight Mw of the high molecular weight component is greater than 200,000 a.m.u.
5. (Original) The bimodal polyethylene of Claim 1, wherein the Group 4 metal residuals content is 1.8 ppm or less.
6. (Original) The bimodal polyethylene of Claim 1, wherein the value of I₂₁/I₂ is greater than 90.

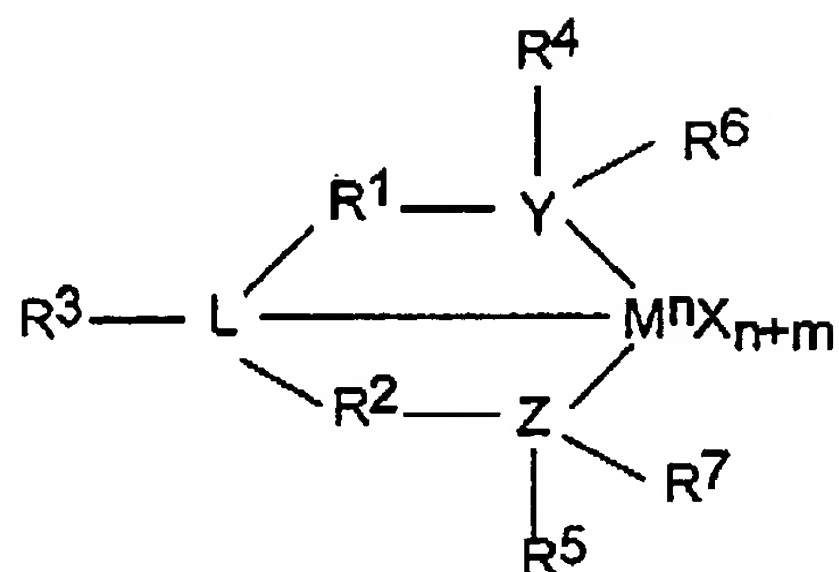
Application No. 10/635,864
Docket No. 1999U026.US-CON3
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7. (Original) The bimodal polyethylene of Claim 1, possessing a notch tensile test result of greater than 150 hours at 3.0MPa.
8. (Original) The bimodal polyethylene of Claim 1, wherein a pipe with carbon black formed from the polyethylene is able to withstand at least 50 years at an ambient temperature of 20°C, using water as the internal test medium and either water or air as the outside environment (Hydrostatic (hoop) stress as measured by ISO TR 9080).
9. (Original) The bimodal polyethylene of Claim 1, wherein a pipe with carbon black formed from the polyethylene possesses a predicted S-4 T_c for 110mm pipe of less than -5°C (ISO DIS 13477/ASTM F1589).
10. (Original) The bimodal polyethylene of Claim 1, wherein a pipe with carbon black formed from the polyethylene possesses a predicted S-4 T_c for 110mm pipe of less than -15°C (ISO DIS 13477/ASTM F1589).
11. (Original) The bimodal polyethylene of Claim 1, wherein when formed into a 0.5mil (13μ) film possesses an MD Tear of between about 5 g/mil and 25 g/mil.
12. (Original) The bimodal polyethylene of Claim 1, wherein when formed into a 0.5mil (13μ) film possesses an MD Tear of between about 15 g/mil and 25 g/mil.
13. (Original) The bimodal polyethylene of Claim 1 formed in a single reactor by contacting olefins and a catalyst composition comprising a Group 15 containing compound and a bulky ligand metallocene catalyst compound; wherein the Group 15 containing metal compound is represented by the formulae:

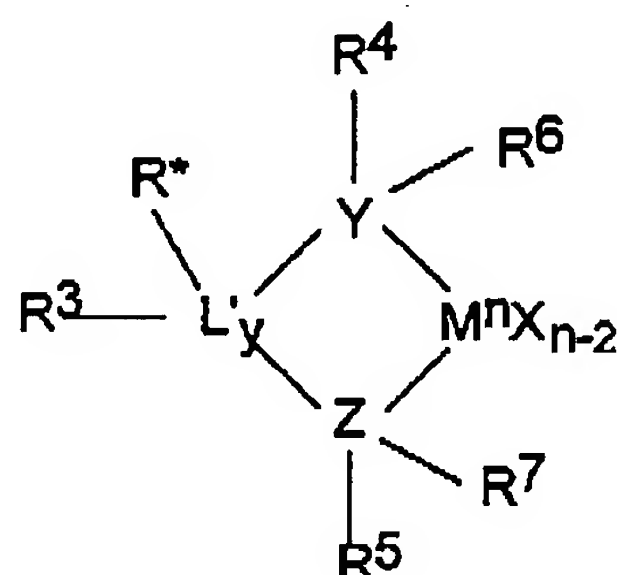
Application No. 10/635,864

Docket No. 1999U026.US-CON3

Reply to Office Action Dated September 15, 2005



or



wherein M is a Group 4, 5 or 6 metal;

each X is independently a leaving group;

y is 0 or 1;

n is the oxidation state of M;

m is the formal charge of the ligand comprising the YZL or YZL' groups;

L is a Group 15 or 16 element;

L' is a Group 15 or 16 element or Group 14 containing group;

Y is a Group 15 element;

Z is a Group 15 element;

R¹ and R² are independently a C₁ to C₂₀ hydrocarbon group, a heteroatom containing group having up to twenty carbon atoms, silicon, germanium, tin, lead, or phosphorus; wherein R¹ and R² may be interconnected to each other;

Application No. 10/635,864

Docket No. 1999U026.US-CON3

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R^3 is absent or a hydrocarbon group, hydrogen, a halogen, a heteroatom containing group;

R^4 and R^5 are independently an alkyl group, an aryl group, substituted aryl group, a cyclic alkyl group, a substituted cyclic alkyl group, a cyclic arylalkyl group, a substituted cyclic arylalkyl group or multiple ring system; wherein R^4 and R^5 may be interconnected to each other;

R^6 and R^7 are independently absent, or hydrogen, an alkyl group, halogen, heteroatom or a hydrocarbyl group; and

R^8 is absent, or is hydrogen, a Group 14 atom containing group, a halogen, a heteroatom containing group.